

III. Remarks

Applicant thanks the examiner for the kindness of the after-final interview of June 18, 2003.

By way of this amendment, Applicant proposes to amend the specification as required by the final action of April 8, 2003 (Paper No. 15). Applicant also proposes to amend the claims as follows: The skeletal structures previously identified in claims 4 and 5 only by reference to the specification and drawings are now incorporated into the said claims; claim 5 is amended to recite that R<sub>14</sub> is a nitro group, a cyano group, a carboxylic acid group, an ester, an amide, a ketone, or an aldehyde group (this limitation, though present in the claim as filed, was inadvertently omitted from Applicant's amendment of December 23, 2002, and is therefore re-presented here in the event that the aforesaid amendment was taken as an instruction to delete the indicated limitation); and independent claims 1 and 19 are amended to recite that the inventive article and process comprise a time-temperature integrator containing "at least one reversible, crystalline indicator...which has photochromic properties on the basis of transfer reactions in crystalline materials, and wherein further the reversible indicator is characterized by discoloration following photo-induced coloration thereof, the discoloration...proceeding as a function of both time and temperature."

The present invention concerns an article and method for determining the age and temperature exposure history of a product sensitive to aging and temperature, such as, for example, perishable food products. To make these determinations, the present invention provides a reversible, crystalline indicator which, following photo-induced coloration thereof, undergoes discoloration proceeding as a function of both time and temperature.

Upon application of a suitable filter or other means to avoid renewed coloration of the reversible indicator, discoloration of the crystalline indicator will proceed without interruption at a rate that varies with temperature.

As the examiner has already acknowledged, the Kanakkanatt reference (or, for that matter, any of the prior art of record) fails to teach such a crystalline indicator having photochromic properties on the basis of transfer reactions in crystalline materials. Rather, that reference discloses dyes which may be part of a polymer dispersion, or which may be absorbed into or adsorbed onto polymers. *See* p. 6. It must likewise be conceded that Kanakkanatt (as well as, again, the other art of record) fails to teach or render obvious any material characterized by discoloration following photo-induced coloration, where the discoloration proceeds as a function of both time and temperature. Rather, the *only photo-induced* materials taught in Kanakkanatt, photochromic dyes, are characterized by a visual color change in response to exposure to specific irradiation frequencies. Even accepting, *arguendo*, the examiner's characterization of Kanakkanatt as teaching discoloration by reason of the disclosure of a temporary color change in these photochromic dyes, it is simply beyond argument that such "discoloration" does not proceed as a function of *both time and temperature*. Indeed, the only temperature-responsive materials disclosed in Kanakkanatt are thermochromic dyes, which dyes do *not* undergo photo-induced coloration, such as instantly claimed, but which instead change the one or more frequencies of light absorbed in response to temperature changes.

IV. Conclusion

In view of the foregoing, Applicant submits that the claims are in condition for immediate allowance. Of course, the examiner is invited to contact Applicant's undersigned counsel at (734) 662-0270 if she should have any questions respecting this paper, or if a telephonic interview might otherwise expedite the prosecution of this case.

Respectfully submitted,

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